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Reteaching

Order of Operations and Evaluating Expressions

Exponents are used to represent repeated multiplication of the same number. For example, $4 \times 4 \times 4 \times 4 \times 4 = 4^5$. The number being multiplied by itself is called the base; in this case, the base is 4. The number that shows how many times the base appears in the product is called the exponent; in this case, the exponent is 5. 4^5 is read *four to the fifth power*.

Problem

How is $6 \times 6 \times 6 \times 6 \times 6 \times 6 \times 6$ written using an exponent?

The number 6 is multiplied by itself 7 times. This means that the base is 6 and the exponent is 7. $6 \times 6 \times 6 \times 6 \times 6 \times 6 \times 6$ written using an exponent is 6^7 .

Exercises

Write each repeated multiplication using an exponent.

1. $4 \times 4 \times 4 \times 4 \times 4$

4^5

2. $2 \times 2 \times 2$

3. $1.1 \times 1.1 \times 1.1 \times 1.1 \times 1.1$

1.1^5

4. $3.4 \times 3.4 \times 3.4 \times 3.4 \times 3.4 \times 3.4$

3.4^6

5. $(-7) \times (-7) \times (-7) \times (-7)$

$(-7)^4$

6. $11 \times 11 \times 11$

Write each expression as repeated multiplication.

7. 4^3

$4 \cdot 4 \cdot 4$

8. 5^4

9. 1.5^2

$1.5 \cdot 1.5$

10. $\left(\frac{2}{7}\right)^4$

11. x^7

$x \cdot x \cdot x \cdot x \cdot x \cdot x \cdot x$

12. $(5n)^3$

13. Trisha wants to determine the volume of a cube with sides of length s . Write an expression that represents the volume of the cube.

$s \cdot s \cdot s$

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Practice

Form G

Order of Operations and Evaluating Expressions

Simplify each expression.

1. 4^2

16

2. 5^5

3. 1^{10}

1

1-11 ODDS
17-23 ODDS

4. $\left(\frac{5}{6}\right)^2$

5. $(1+3)^2$

16

6. $(0.1)^3$

7. $5+3(2)$

11

8. $\left(\frac{16}{2}\right)-4(5)$

9. $4^4(5)+3(11)$

1313

10. $17(2)-4^2$

11. $\left(\frac{20}{5}\right)^3-10(3)^2$

-26

12. $\left(\frac{27-12}{8-3}\right)^3$

 $5\frac{1}{16}$

13. $(4(5))^3$

 $(20)^3=8000$

14. $2^5-4^2+2^2$

15. $\left(\frac{3(6)}{17-5}\right)^4$

 $\left(\frac{18}{12}\right)^4=\left(\frac{3}{2}\right)^4 \frac{81}{16}$

Evaluate each expression for $s=2$ and $t=5$.

16. $s+6$

17. $5-t$

0

18. $11.5+s^2$

 $5\frac{1}{16}$

19. $\frac{s^4}{4}-17$

-13

20. $3(t)^3+10$

21. s^3+t^2

33

22. $-4(s)^2+t^3+5$

23. $\left(\frac{s+2}{5t^2}\right)^2$

 $\frac{16}{15625}$

24. $\left(\frac{3s(3)}{11-5(t)}\right)^2$

 $\rightarrow 0.001024$

25. Every weekend, Morgan buys interesting clothes at her local thrift store and then resells them on an auction website. If she brings \$150.00 and spends s , write an expression for how much change she has. Evaluate your expression for $s = \$27.13$ and $s = \$55.14$.